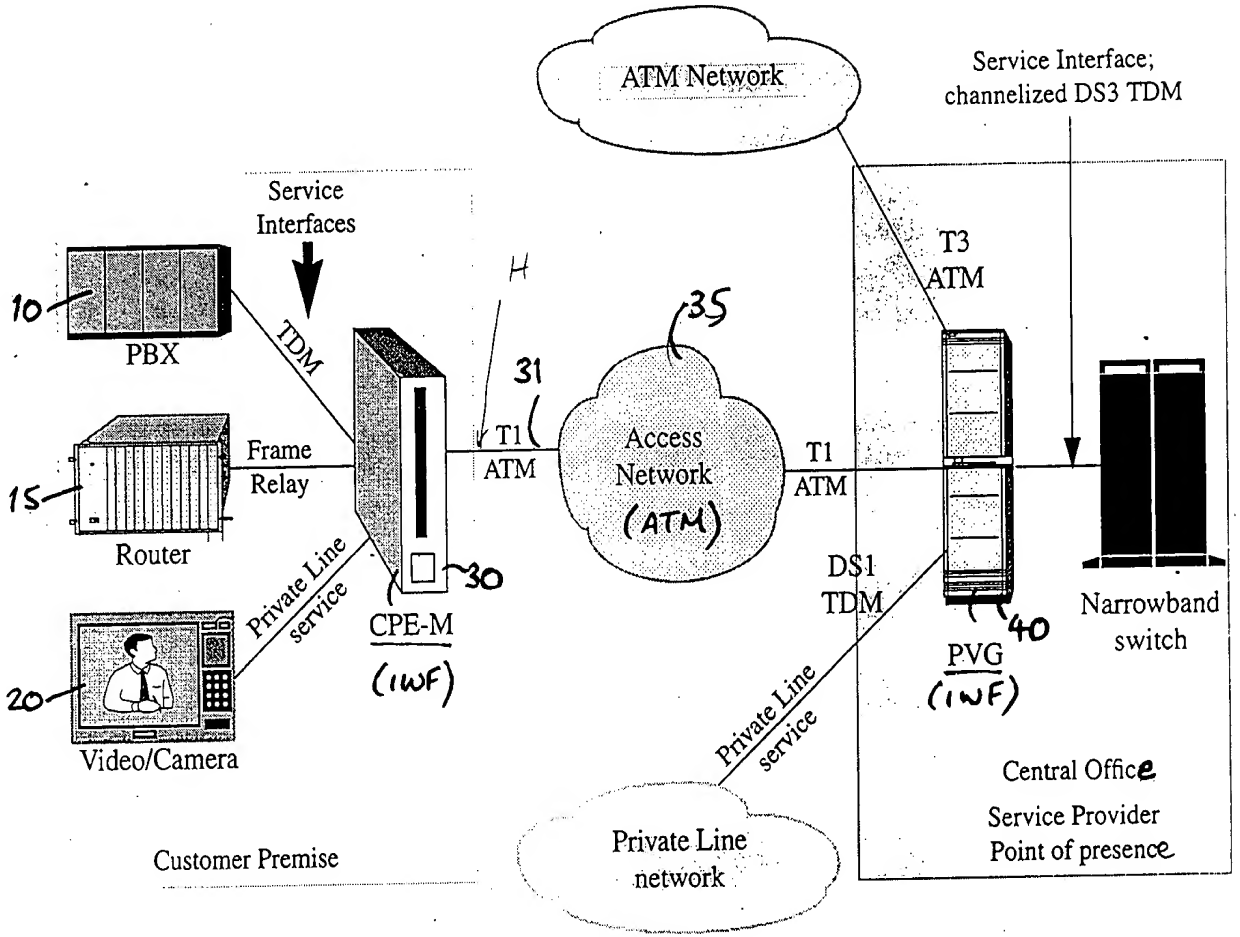
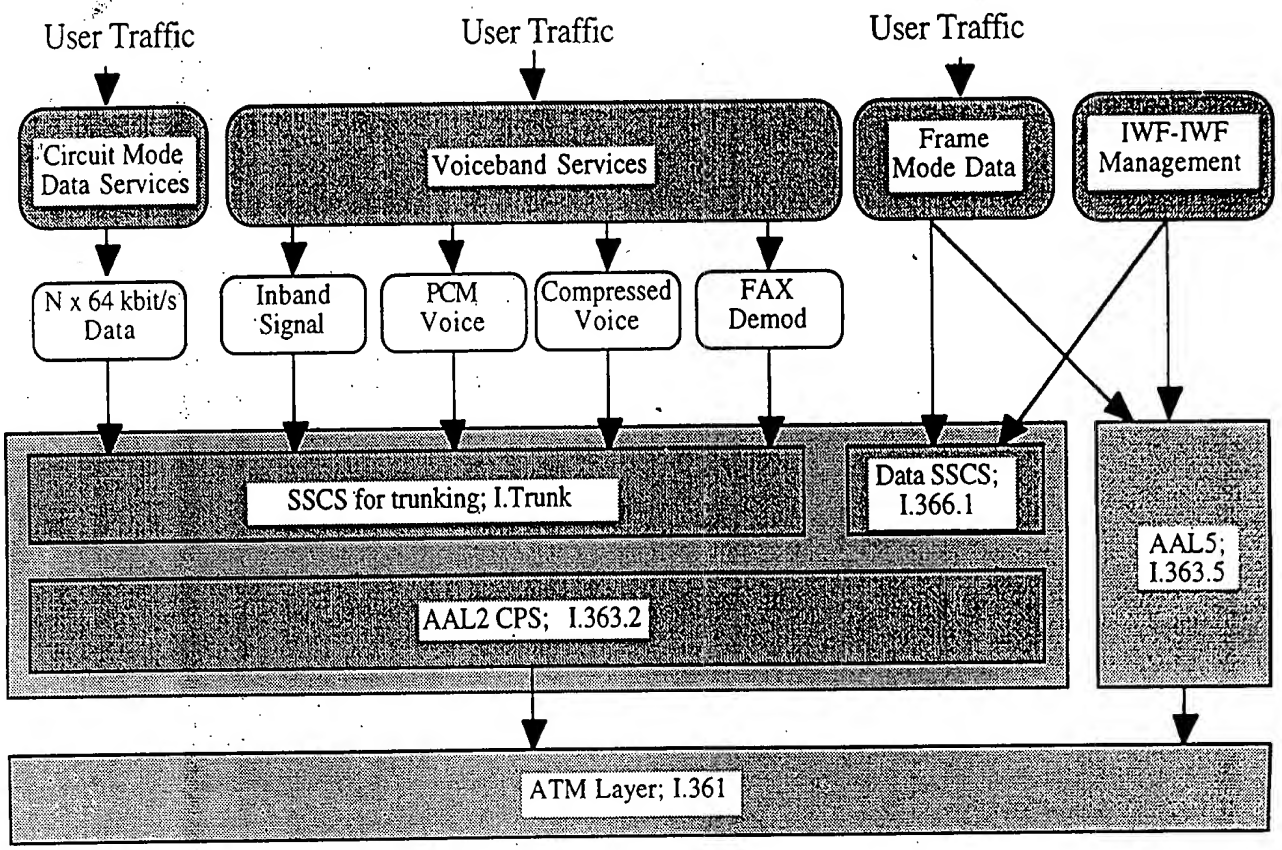

ATM Network
Service Interface;
channelized DS3 TDM
Service
Interfaces
10
PBX
TDM
H
31
T1
ATM
35
Access
Network
(ATM)
T1
ATM
T3
ATM
15
Frame
Relay
Router
Private Line
service
30
CPE-M
(IWF)
DS1
TDM
40
PVG
(IWF)
Narrowband
switch
20
Video/Camera
Private Line
service
Central Office
Service Provider
Point of presence
Private Line
network
Customer Premise

FIG. 1

6657660 "2869E60

FIG. 2



66ST60 Z8696E60

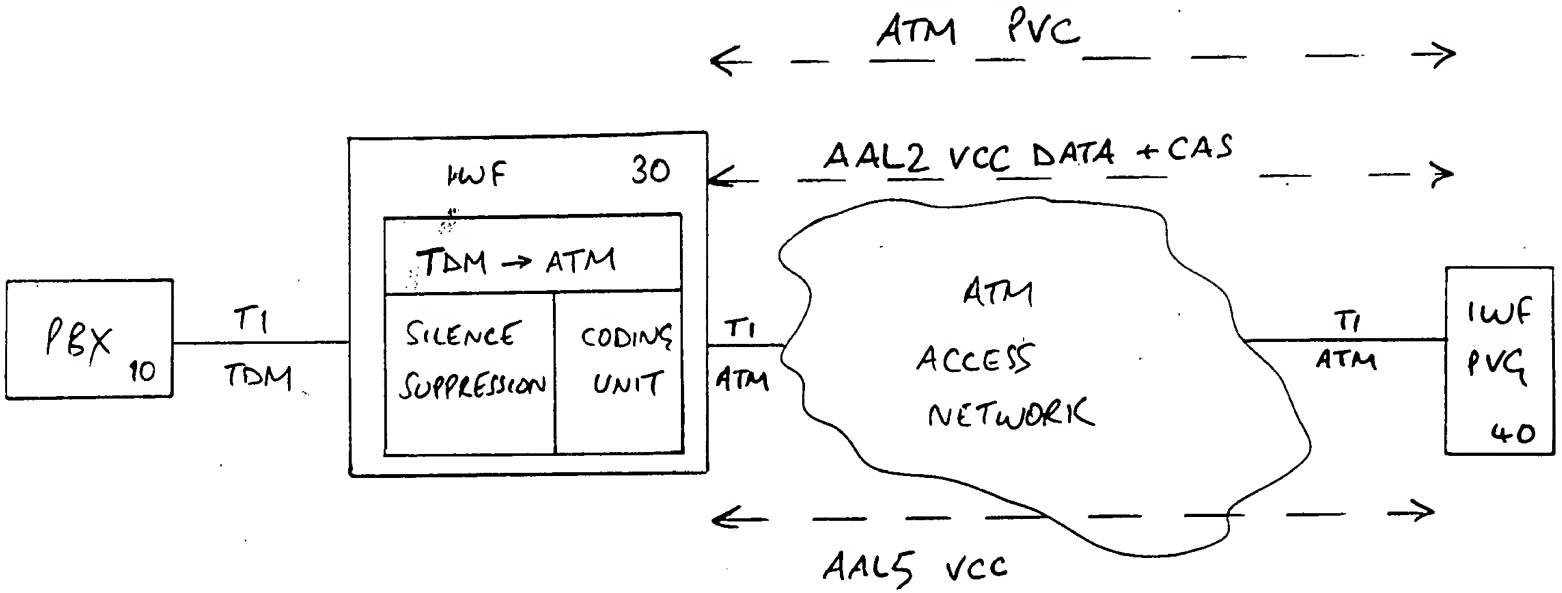



FIG. 3

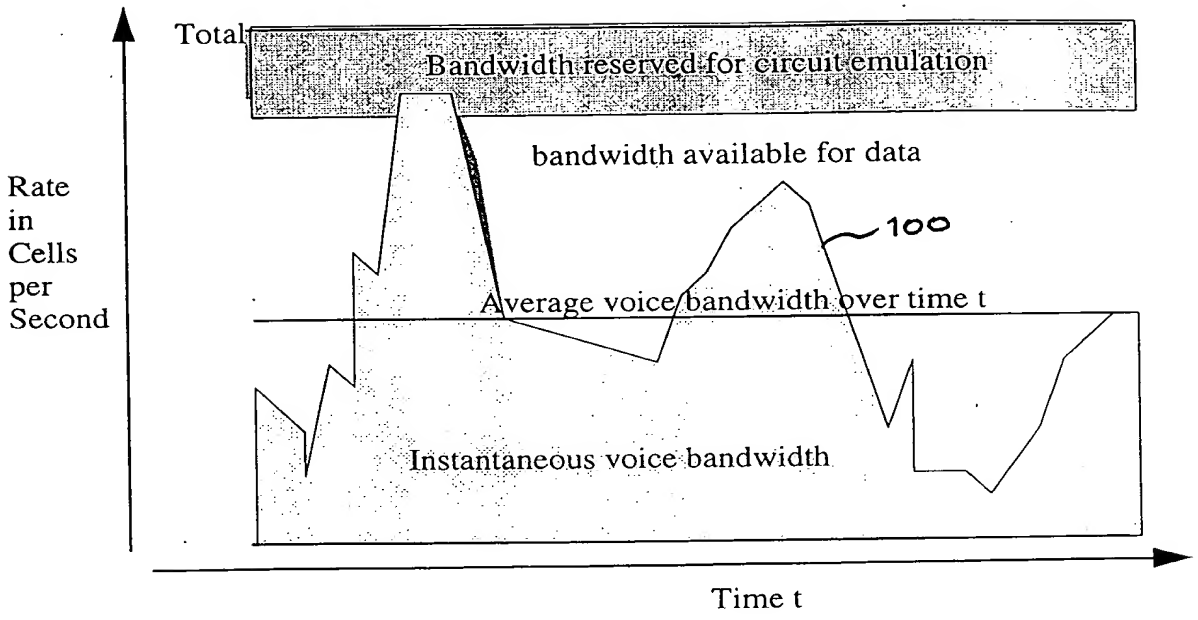

Total
Bandwidth reserved for circuit emulation
bandwidth available for data
100
Rate in Cells per Second
Average voice bandwidth over time t
Instantaneous voice bandwidth
Time t

FIG. 4

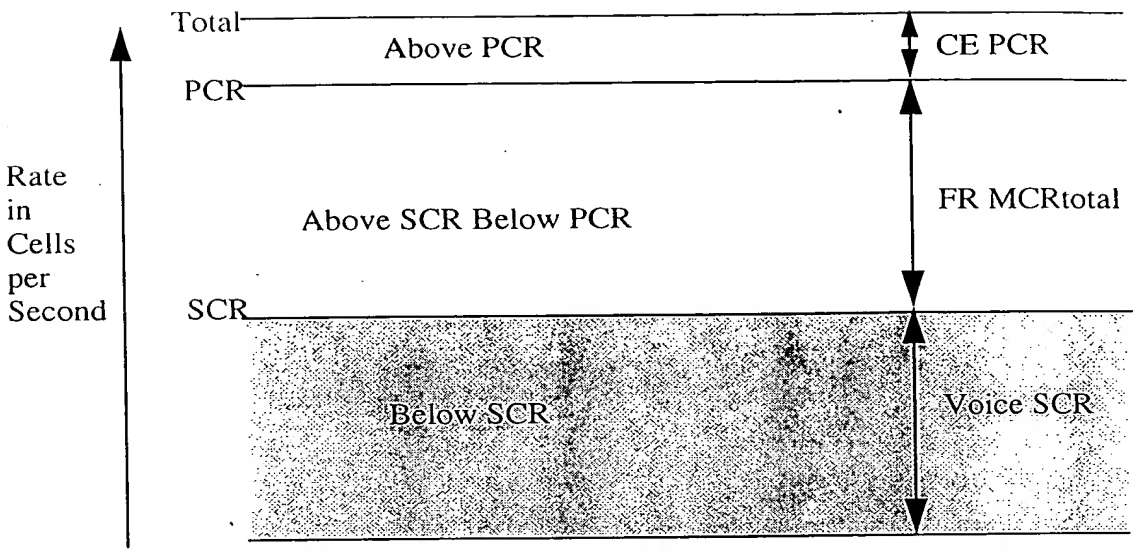



FIG. 5

Substitute Sheet (Rule 26)

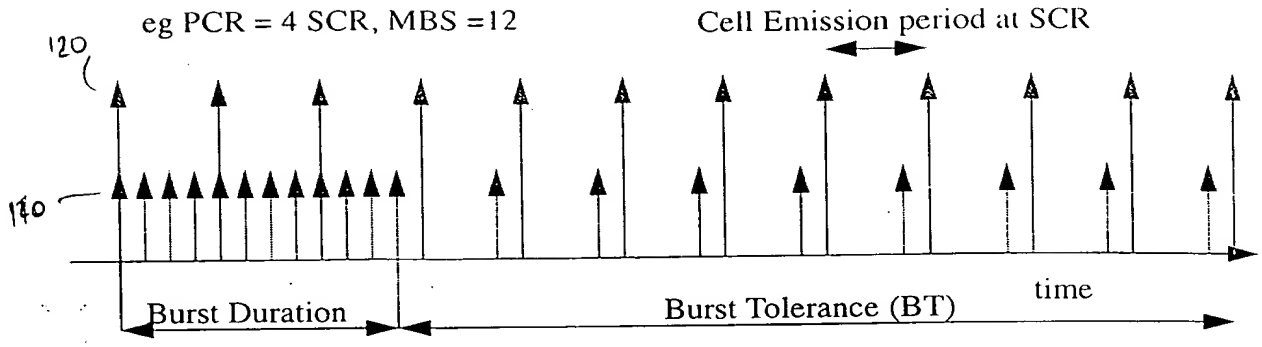

eg PCR = 4 SCR, MBS =12
Cell Emission period at SCR
120
140
Burst Duration
Burst Tolerance (BT)
time

FIG. 6

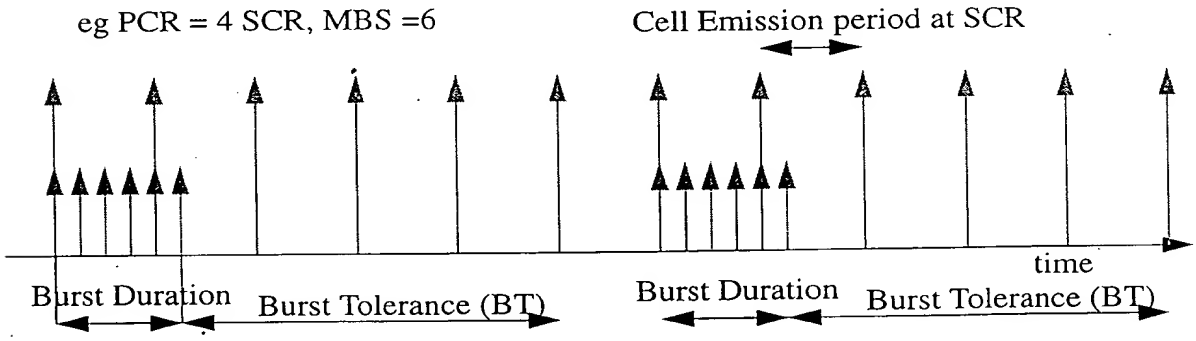

eg PCR = 4 SCR, MBS =6
Cell Emission period at SCR
Burst Duration
Burst Tolerance (BT)
Burst Duration
Burst Tolerance (BT)
time

FIG. 7

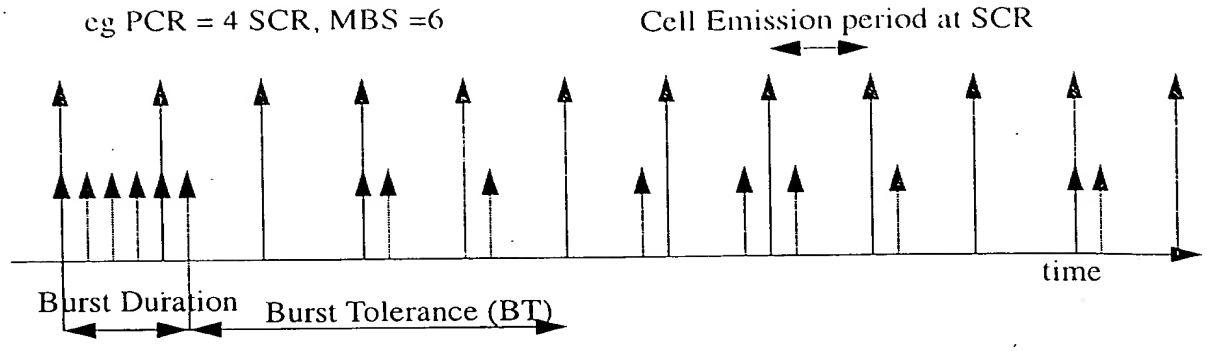



FIG. 8

09/506,396

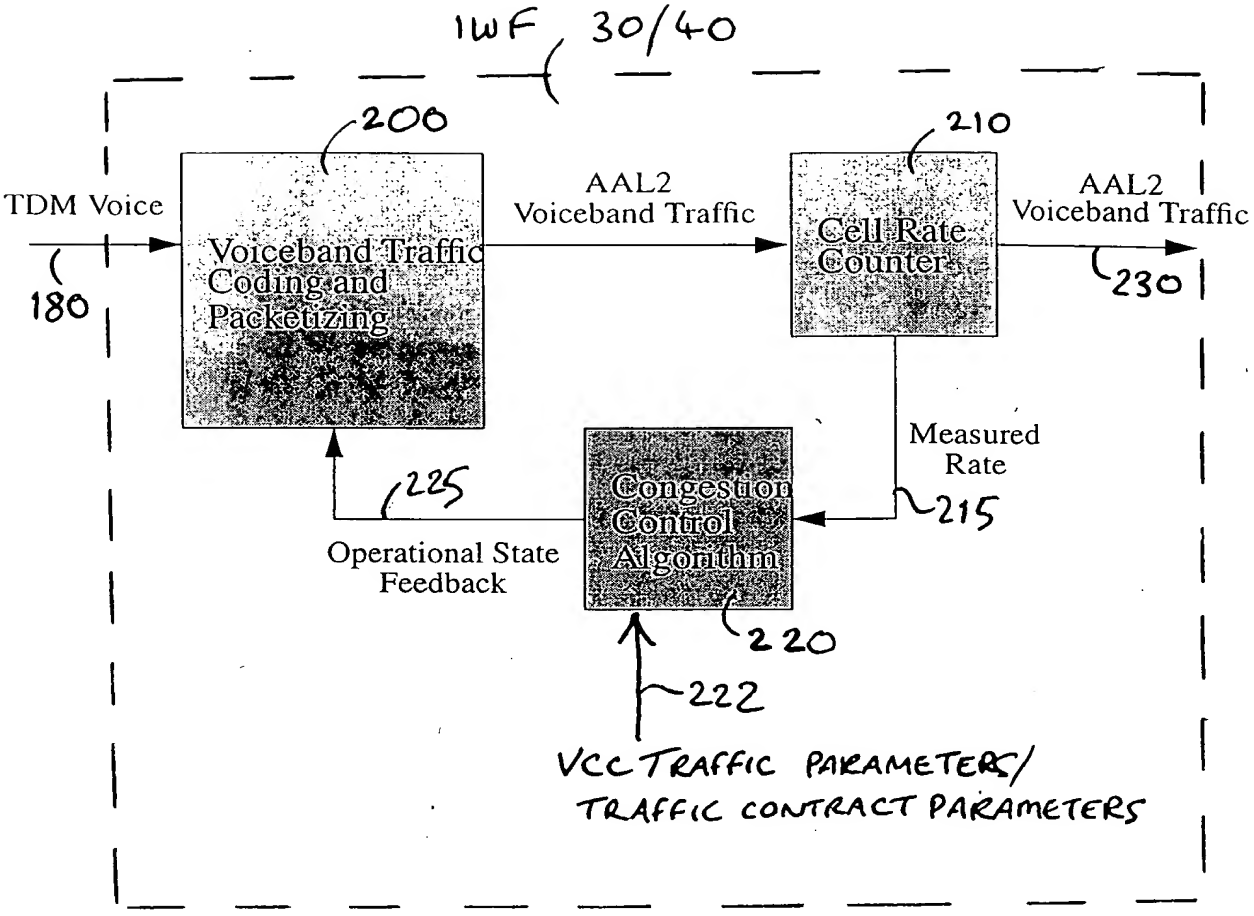

IWF 30/40
200
210
TDM Voice
180
Voiceband Traffic Coding and Packetizing
AAL2 Voiceband Traffic
Cell Rate Counter
AAL2 Voiceband Traffic
230
Measured Rate
215
225
Operational State Feedback
Congestion Control Algorithm
220
222
VCC TRAFFIC PARAMETERS/
TRAFFIC CONTRACT PARAMETERS

FIG. 9

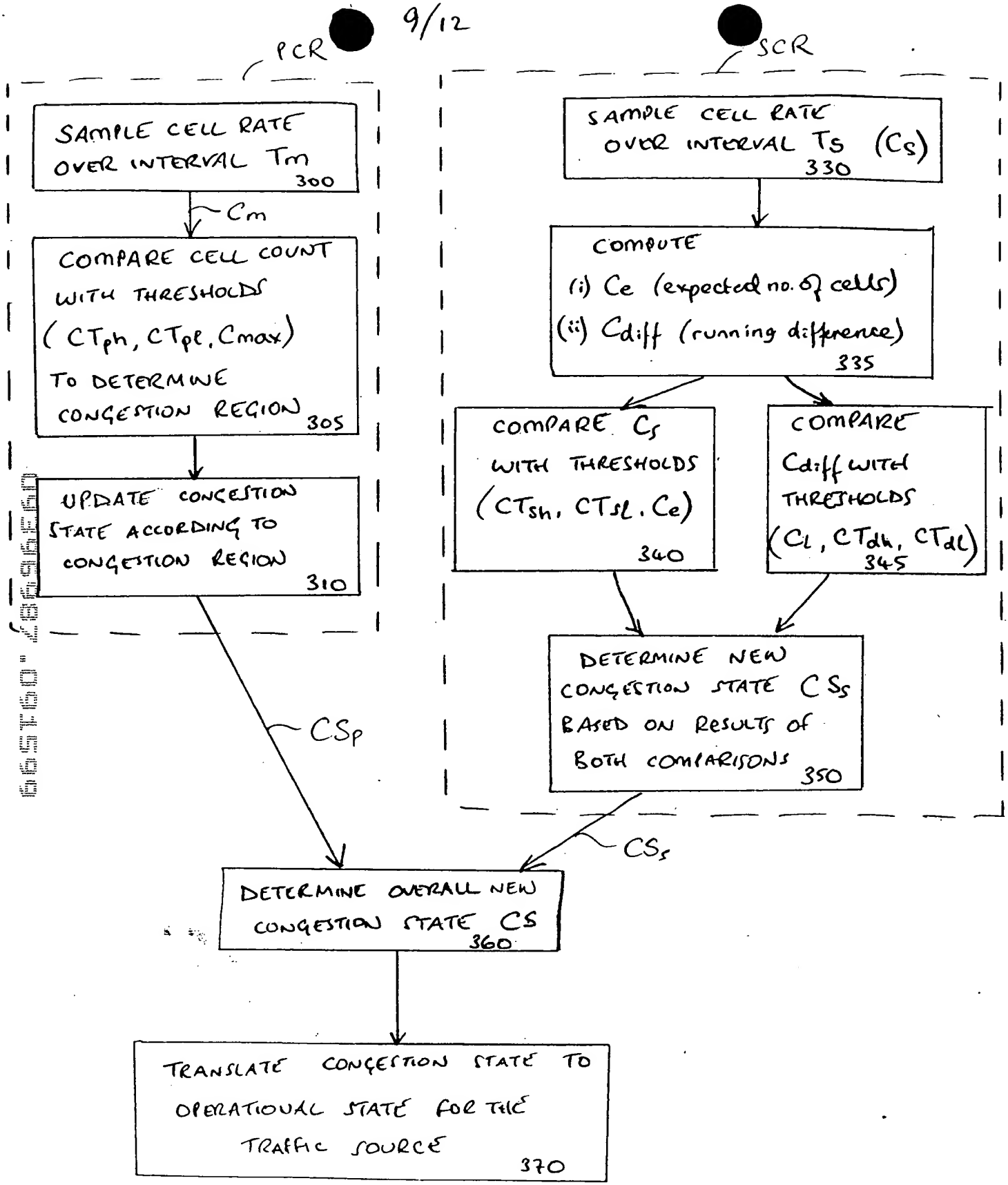
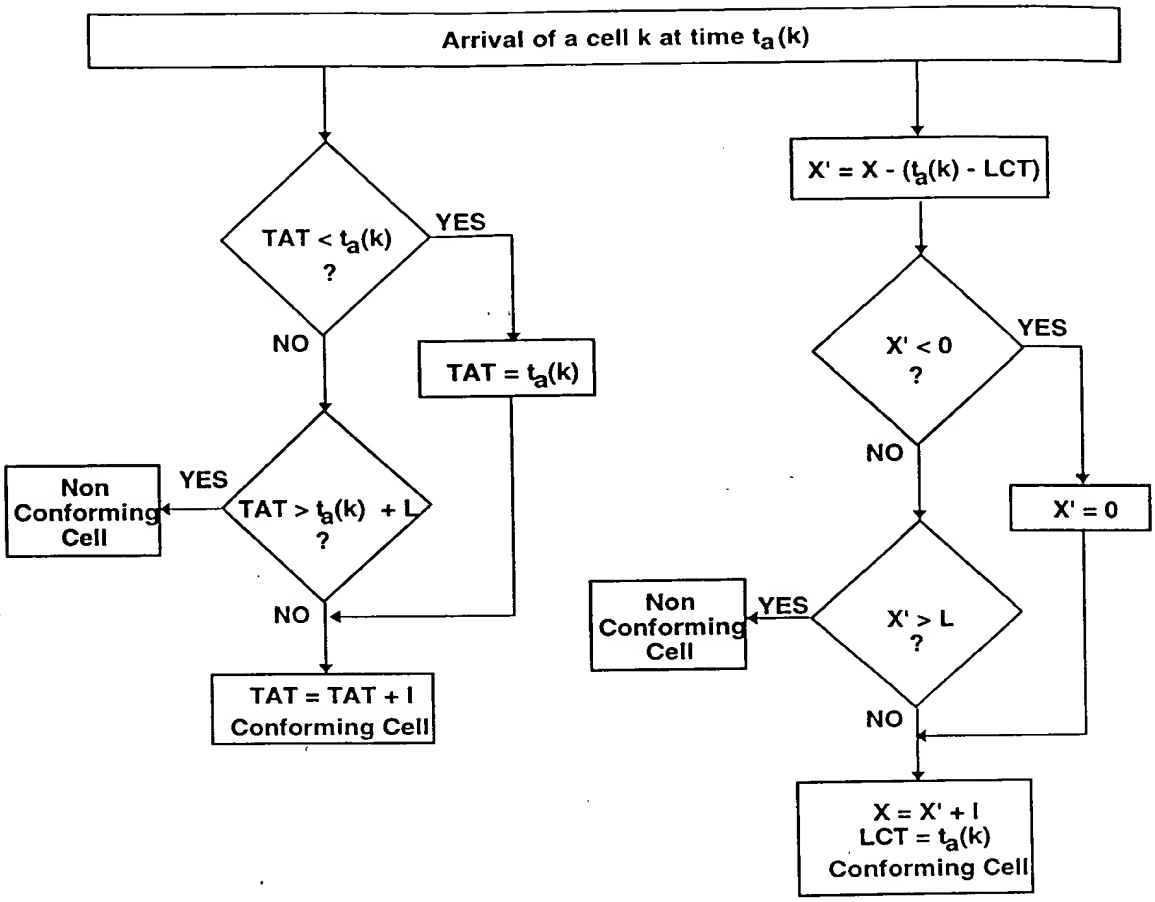

PCR
SCR
SAMPLE CELL RATE OVER INTERVAL Tm
300
Cm
COMPARE CELL COUNT WITH THRESHOLDS (CTph, CTpl, Cmax) TO DETERMINE CONGESTION REGION
305
UPDATE CONGESTION STATE ACCORDING TO CONGESTION REGION
310
CSp
SAMPLE CELL RATE OVER INTERVAL Ts (Cs)
330
COMPUTE
(i) Ce (expected no. of cells)
(ii) Cdiff (running difference)
335
COMPARE Cs WITH THRESHOLDS (CTsh, CTsl, Ce)
340
COMPARE Cdiff WITH THRESHOLDS (CL, CTdh, CTdl)
345
DETERMINE NEW CONGESTION STATE CSs BASED ON RESULTS OF BOTH COMPARISONS
350
CSs
DETERMINE OVERALL NEW CONGESTION STATE CS
360
TRANSLATE CONGESTION STATE TO OPERATIONAL STATE FOR THE TRAFFIC SOURCE
370

FIG. 10




## VIRTUAL SCHEDULING ALGORITHM

TAT Theoretical Arrival Time

$t_a(k)$ Time of arrival of a cell

I Increment

L Limit

At the time of arrival $t_a$ of the first cell of the connection, $TAT = t_a(1)$

## CONTINUOUS-STATE LEAKY BUCKET ALGORITHM

X Value of the Leaky Bucket counter

X' auxiliary variable

LCT Last Compliance Time

At the time of arrival $t_a$ of the first cell of the connection, $X = 0$ and $LCT = t_a(k)$

FIG. 11
(PRIOR ART)

**PCR congestion regions**

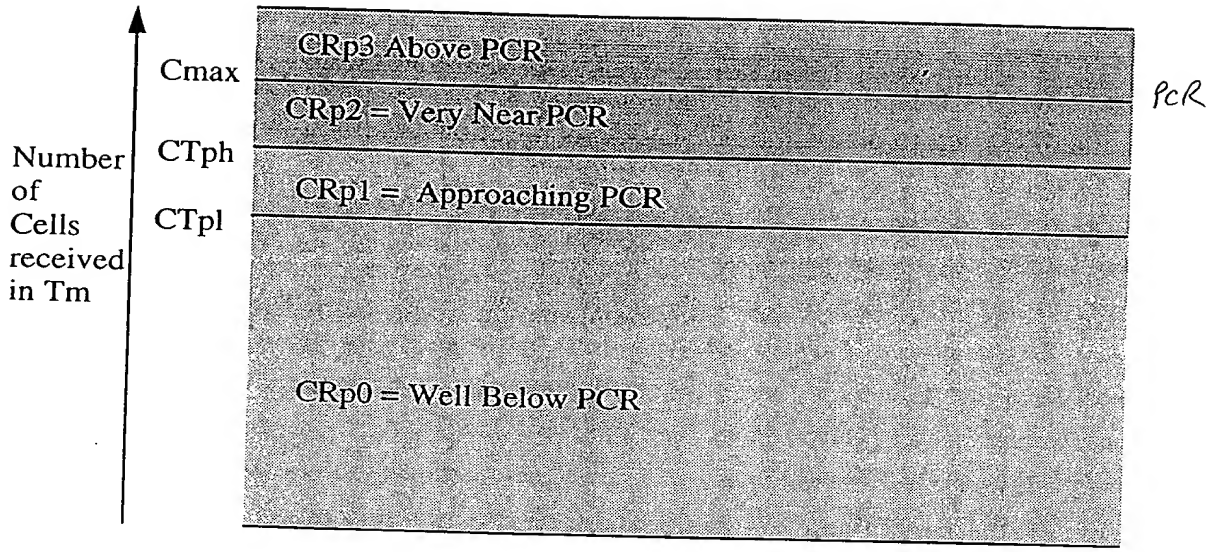



FIG. 12

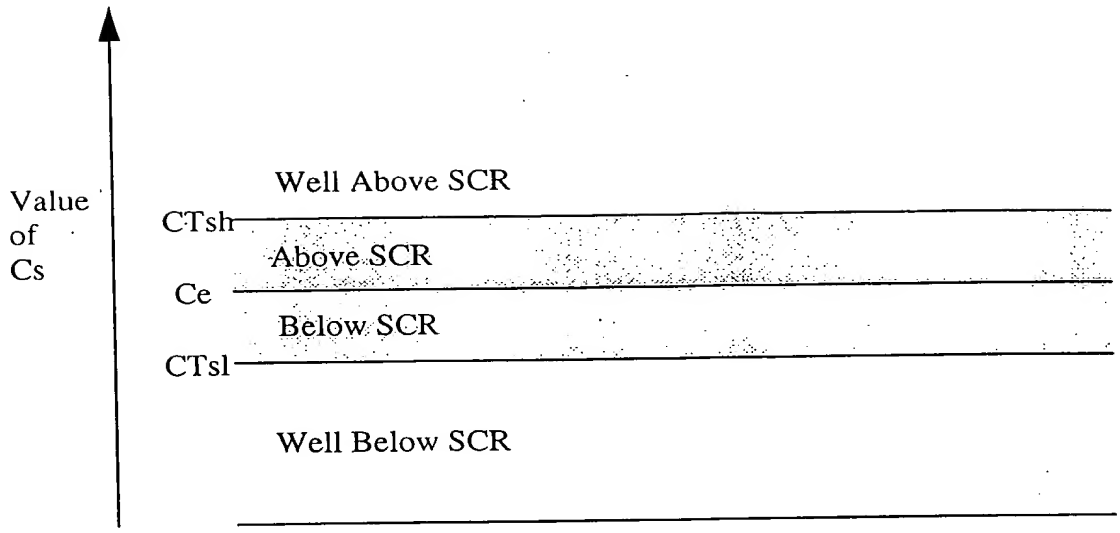

Value of Cs
Well Above SCR
CTsh
Above SCR
Ce
Below SCR
CTsl
Well Below SCR

FIG. 13

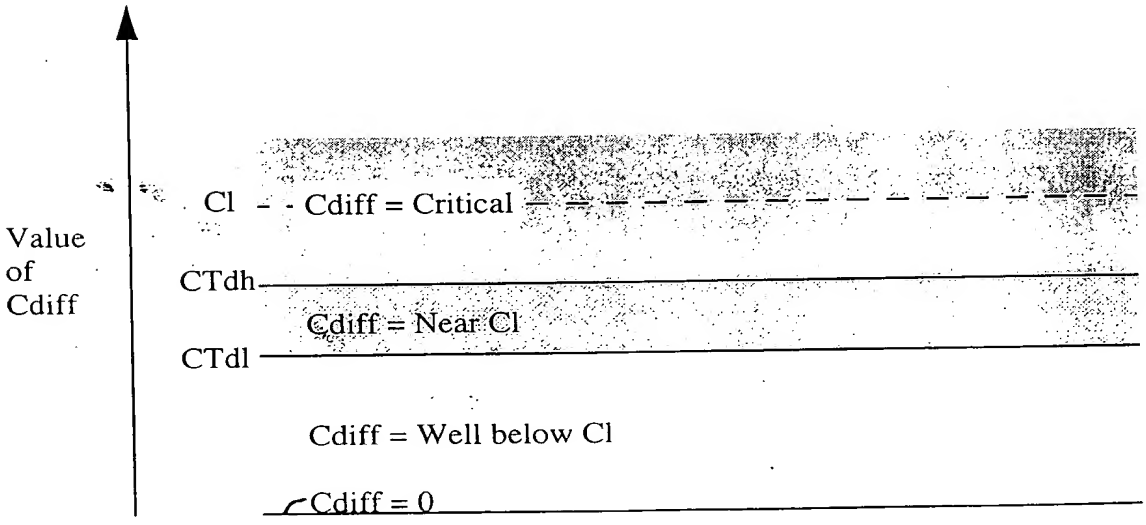

Value of Cdiff
Cl - - Cdiff = Critical
CTdh
Cdiff = Near Cl
CTdl
Cdiff = Well below Cl
Cdiff = 0

FIG. 14